Statistics in focus

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Contents

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The impact of other transport equipment on the new orders index

The index of new orders is an important measure of likely future output within the industrial economy. Not all goods are made to order; indeed, many producers may stock their goods until they are able to sell them. Nevertheless, for other items manufacturers may receive orders. In some cases these can be very important in monetary terms and can relate to work for a considerable period (for example, the construction of a ship that may take several years). As such, there can be considerable fluctuations in new orders indices when they relate to large, expensive items that are ordered at irregular intervals.

A new order is defined as a contract linking a producer and a third party with respect to future deliveries by the producer of goods and services: the new orders index reflects the value of such orders. Certain activities typically do not work to order, and so the index of new orders within the short-term statistics Regulation (STS-R) does not cover the full spectrum of industrial activities. The activities that are included are covered by NACE Divisions 17, 18, 21, 24, and NACE Divisions 27 to 35. When all of these headings are aggregated they are collectively referred to as manufacturing industries working on orders. A special aggregate covering manufacturing industries working on new orders excluding the manufacture of other transport equipment (NACE Division 35) was introduced by Eurostat at the start of 2006. This aggregate was created as a result of observing considerable fluctuations in the index of new orders for other transport equipment, which had a knock-on effect on the index for manufacturing industries working on orders, such that the underlying trend of the latter became difficult to identify.

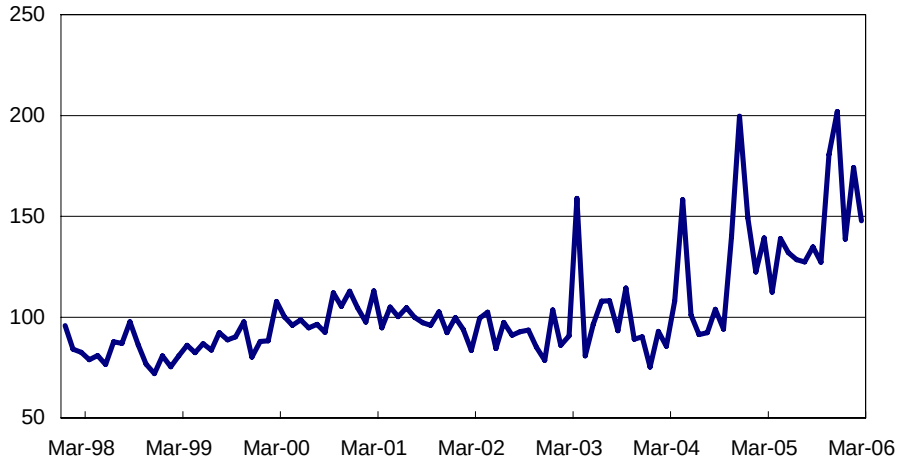


Figure 1: Index of new orders for the manufacture of other transport equipment, seasonally adjusted, EU-25 (2000=100); Source: Eurostat STS

The figure above shows the considerable variation in new orders index for other transport equipment, which is an activity characterised by large one-off orders for items such as aircraft, railway rolling stock or ships. As such, when an order is placed the index tends to rise rapidly and then fall (often by a similar magnitude) in the following period.

New orders: definition and calculation

The definition of new orders used in the EU short-term statistics is total new orders received in the period, typically a month or a quarter. An alternative and potentially interesting definition, not used here, would be the total stock of outstanding orders in hand. The series for new orders received in a month can show high peaks in months when exceptional large new orders are received.

Not all economic activities are organised in a manner such that they work to order. For example, in some activities it is more common for production to be stocked and then orders to be filled from work that has already been finished. Furthermore, not all units within a single activity work in the same way and only some enterprises may work to order. Indeed, many enterprises may work only partly to order, while the rest of the time they work on the basis of regular, continuous production for stock. These differences have consequences for the measurement of orders and for the establishment of weights that are used to compile associated indices.

Other transport equipment: definition and importance

The manufacture of other transport equipment is classified as NACE Division 35 within NACE (the statistical classification of economic activities in the European Community). The heading for Division 35 covers the manufacture of ships and boats, railway locomotives and rolling stock, aerospace equipment, bicycles and mopeds, and other non-automotive transport equipment).

In 2000, other transport equipment accounted for 2.4 % of the EU-25's industrial (NACE Sections C to E) turnover. The importance of other transport equipment was higher in terms of its share of the non-domestic market, as it accounted for 3.9 % of the industrial total. This higher share of non-domestic industrial turnover was in keeping with the other activities that tend to work to order, as only wearing apparel (Division 18) and fabricated metal products (Division 28) reported lower shares of non-domestic industrial turnover than of domestic industrial turnover.

	Total	Domestic	Non-domestic
Textiles (NACE 17)	2.0	1.9	2.3
Wearing apparel (NACE 18)	1.4	1.5	1.4
Pulp, paper and paperboard (NACE 21)	2.6	2.4	3.0
Chemicals and chemical products (NACE 24)	9.2	7.7	12.4
Basic metals (NACE 27)	3.8	3.3	4.9
Fabricated metal products (NACE 28)	5.8	6.7	3.9
Machinery and equipment (NACE 29)	7.8	6.1	11.3
Office machinery and computers (NACE 30)	1.5	0.8	3.0
Electrical machinery and apparatus (NACE 31)	3.8	3.3	4.6
Radio, TV and communication equipment and apparatus (NACE 32)	4.2	2.7	7.2
Medical and precision instruments (NACE 33)	1.9	1.5	2.8
Motor vehicles (NACE 34)	10.0	6.8	16.6
Other transport equipment (NACE 35)	**2.4**	**1.7**	**3.9**
Manufacturing industries working on orders	56.5	46.4	77.1
Total industry (excluding construction)	100.0	100.0	100.0

Table 1: Weight in industrial turnover, EU-25, 2000 (% share of total industry); source: Eurostat, STS methodology

Table 2 (overleaf) shows the volatility of new orders indices for the EU-25, as measured by the standard deviation of monthly indices during the period 1998 to 2005. The standard deviation is a measure of the spread or dispersion around the mean of a data set. It is the most widely-used measure of spread. Note that the highest standard deviation for all three new orders indices was recorded for the manufacture of other transport equipment.

In general, non-domestic indices were more volatile than domestic indices, although this was not the case for textiles (Division 17) or office machinery and computers (Division 30). The volatility of new orders for other transport equipment was somewhat atypical, as there was not a great difference between the standard deviations for domestic and non-domestic markets.

Other transport equipment: definition and importance (continued)

	Total	Domestic	Non-domestic
Textiles (NACE 17)	6.9	9.5	3.8
Wearing apparel (NACE 18)	4.9	5.0	6.4
Pulp, paper and paperboard (NACE 21)	6.0	4.3	9.4
Chemicals and chemical products (NACE 24)	10.4	8.0	14.8
Basic metals (NACE 27)	12.3	9.3	15.2
Fabricated metal products (NACE 28)	8.3	6.6	15.1
Machinery and equipment (NACE 29)	7.4	4.1	13.5
Office machinery and computers (NACE 30)	9.6	12.1	9.0
Electrical machinery and apparatus (NACE 31)	9.1	6.4	16.3
Radio, TV and communication equipment and apparatus (NACE 32)	9.4	9.5	10.3
Medical and precision instruments (NACE 33)	12.0	10.3	16.5
Motor vehicles (NACE 34)	11.1	6.7	16.3
Other transport equipment (NACE 35)	**24.3**	**29.6**	**30.9**
Manufacturing industries working on orders	8.1	5.2	12.8
Manufacturing industries working on orders, excl. NACE 35	7.6	5.1	12.1

Table 2: Standard deviation of new orders indices, 1998-2005, EU-25 (based on seasonally adjusted, monthly indices); source: Eurostat STS

Domestic and non-domestic markets

A domestic new order is defined by the fact that the third party that makes the order is resident in the same Member State as the observation unit; non-domestic new orders refer to orders made by residents outside of the Member State.

For EU-25 manufacturing industries working on orders, the general development of the overall index of new orders was influenced by both domestic and non-domestic markets (see Figure 2 below). It is apparent that the volatility of new orders indices has grown in recent years, in particular the peaks of April 2003, when the index for domestic new orders grew by 12.6 % compared to the previous month, and December 2004 (8.2 %). For non-domestic orders there were peaks in December 2004 (13.9 %) and December 2005 (7.9 %).

For the manufacture of other transport equipment, the index of new orders for the domestic market fluctuated more than for the non-domestic market during the period 1998 to 2006 (see Figures 3 and 4 overleaf). High peaks for domestic new orders for other transport equipment were recorded in April 2003, May 2004 and December 2004, with orders returning to a more regular level the following month. On the non-domestic market, the index of new orders for other transport equipment closely followed the overall index of new orders until December 2004, when there was a sudden jump in the index to a peak, followed by steady growth from April 2005 to March 2006.

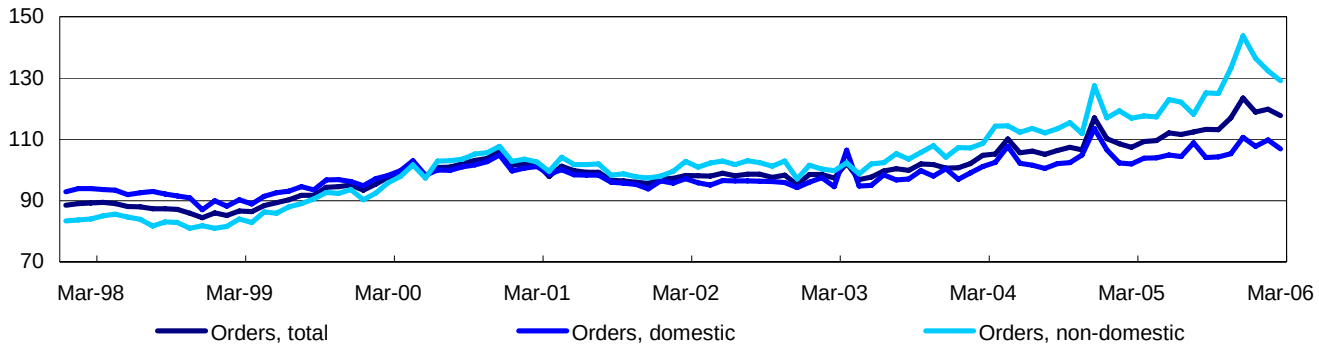


Figure 2: Evolution of the index of new orders for manufacturing industries working on orders for total, domestic and non-domestic markets, seasonally adjusted, EU-25 (2000=100); source: Eurostat STS

Domestic and non-domestic markets (continued)

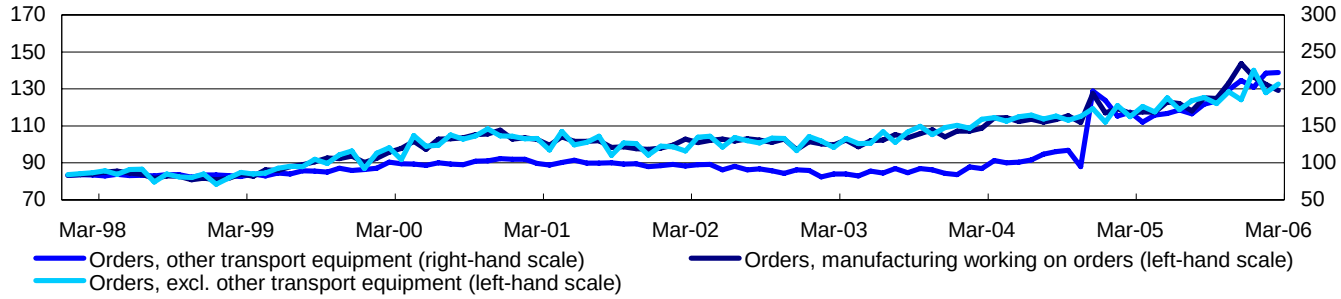


Figure 3: Evolution of the index of new orders for the domestic market, seasonally adjusted, EU-25 (2000=100); source: Eurostat STS

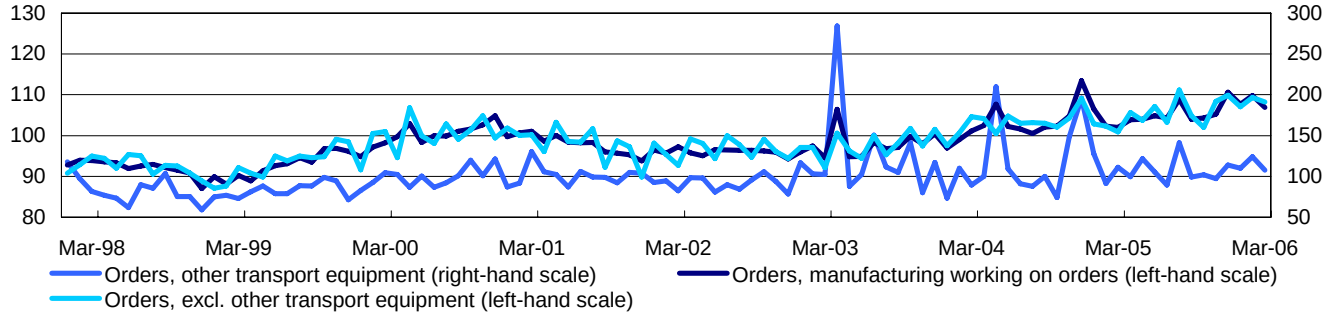


Figure 4: Evolution of the index of new orders for the non-domestic market, seasonally adjusted, EU-25 (2000=100); source: Eurostat STS

Relationship between the index of new orders and index of production

This section focuses on the relationship between new orders and production. Orders received are often considered as the first link in a chain that is followed by production and then sales. As such, the interest in new orders indices stems from the fact that information on orders at one point in time may provide an insight into future developments in production and sales at a later date.

While it may be hoped that the new orders index will show future developments in the demand for goods and services, in practice, there are a number of reasons which mean that there is not always a direct relationship between the two indicators. For instance, the definition of new orders does not take into account cancellations of orders and hence some orders may not, in the end, result in production.

Correlation coefficients determine the intensity of a relationship between two variables, with values ranging from -1 to 1: the nearer the coefficient is to these two extremes the stronger the relationship between the two variables, in either a positive or a negative respect. Over the period January 1998 to March 2006 the correlation coefficient between the EU-25 indices of production and new orders for manufacturing industries working on orders was 0.43 when other transport equipment was included in the orders index, and 0.59 when it was excluded. Despite the fact that one may expect new orders to lead the index of production, the results obtained when lagging the index of production against new orders showed that there was less correlation between the two series.

Figure 6 (overleaf) shows a plot of seasonally adjusted month on month growth rates for the same two indices over the period March 1998 to March 2006. Once again the relationship between the two indices was stronger when excluding the manufacture of other transport equipment.

Figure 7 (also overleaf) shows for a relatively short period of time (between January 2003 and March 2006) that by removing the manufacture of other transport equipment the fluctuation in EU-25 growth rates from one period to the next is considerably reduced.

Relationship between the index of new orders and index of production (continued)

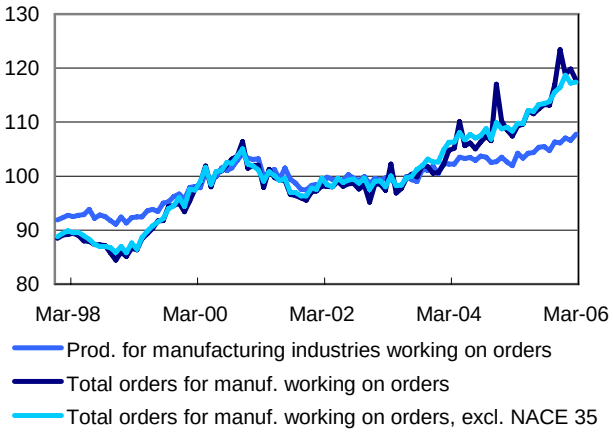


Figure 5: Indices of total new orders and production, seasonally adjusted, EU-25 (2000=100); source: Eurostat STS

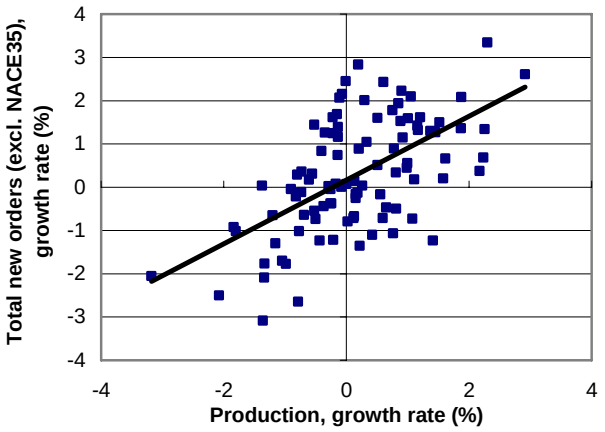


Figure 6: Scatter plot of the month on month growth rates for the indices of total new orders and production for manufacturing industries working on orders (excluding NACE Division 35) during the period 03-1998 to 03-2006, seasonally adjusted, EU-25; source: Eurostat STS

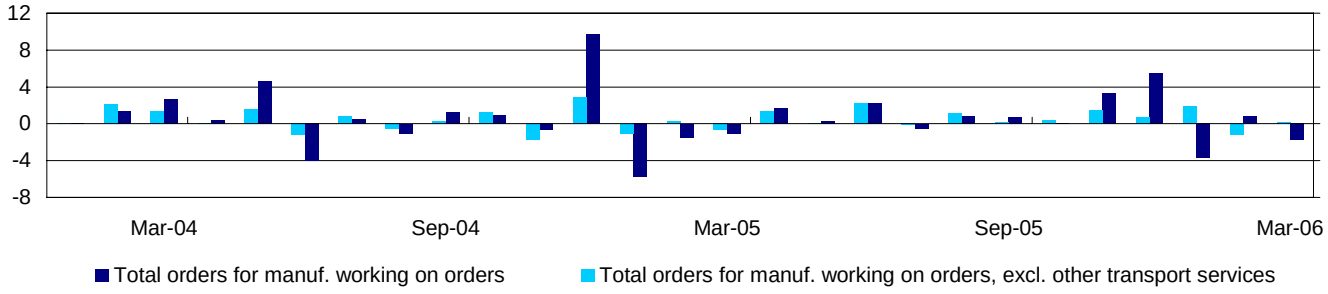


Figure 7: Month on month growth rates for the index of total new orders, seasonally adjusted, EU-25 (%); source: Eurostat STS

Analysis by Member State

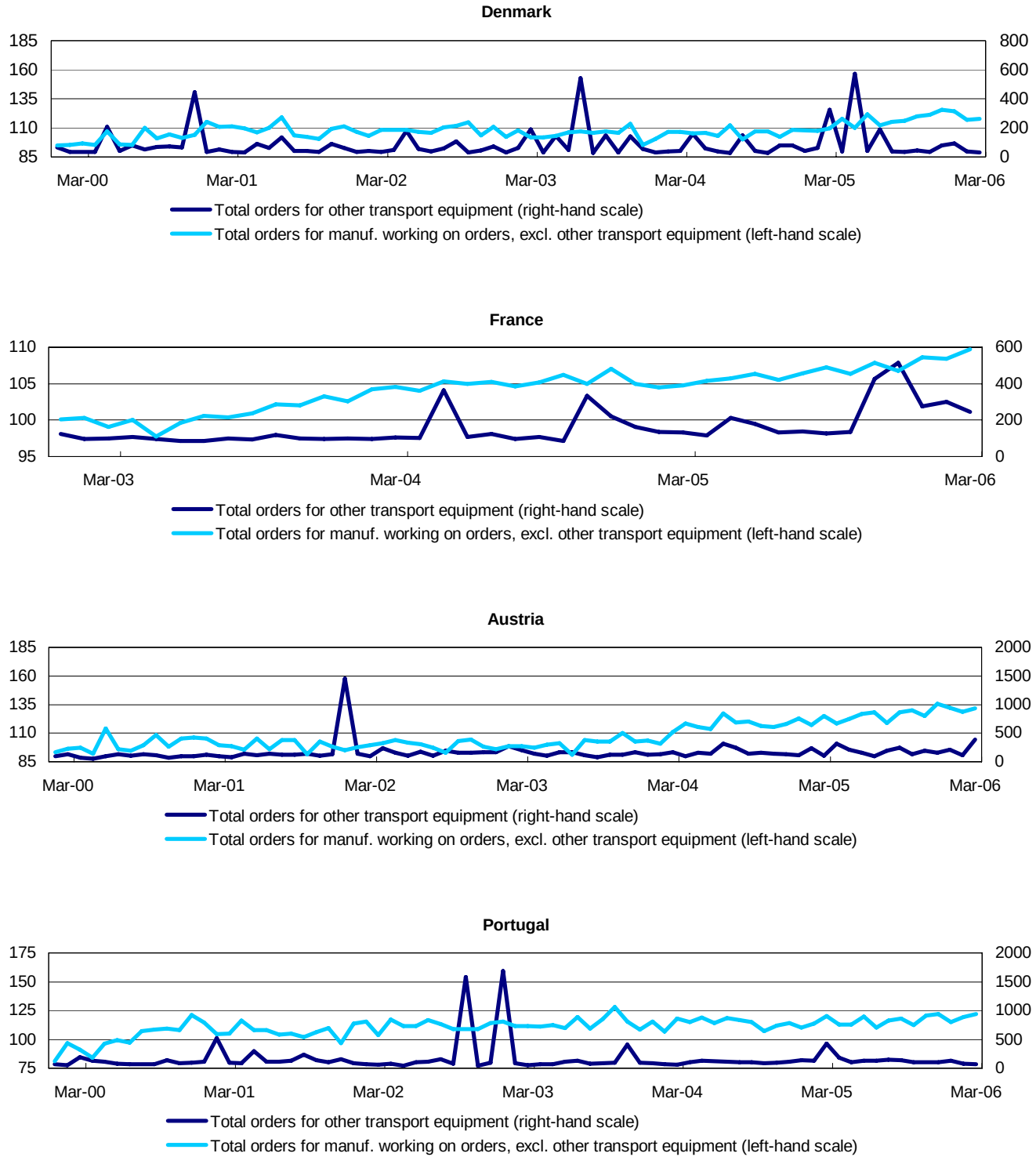
When looking at the data by Member State, a similar pattern to that observed for the EU-25 is confirmed: the exclusion of the manufacture of other transport equipment from the index of new orders reduces volatility when studying the aggregate for manufacturing industries working on orders.

On the basis of structural business statistics (SBS), Germany, France and the United Kingdom accounted for approximately 70 % of the EU-25's value added within the manufacture of other transport equipment in 2002. The United Kingdom alone represented slightly more than 30 % of the EU-25's value added, although unfortunately there are no short-term statistics available for this country for NACE Division 35. Furthermore, no data are available for NACE Division 35 for Spain, Ireland, Cyprus, Luxembourg, Slovenia or Finland either.

Subject to data availability, the highest volatility in the index of new orders for the manufacture of other transport equipment was recorded in Denmark, France, Austria and Portugal (as measured by the standard deviation of the index for new orders). In these Member States, the manufacture of other transport equipment generally accounted for between 1.3 % and 1.7 % of total manufacturing, although this proportion rose to as high as 4.0 % in France. In Portugal, for instance, two peaks were recorded in November 2002 and January 2003, corresponding to two ships ordered on those dates. In a similar vein, the profile of the series for Denmark is heavily related to new orders received in the shipbuilding activity.

For each of the four Member States identified, a graph is shown overleaf. The graphs plot the indices of new orders for the manufacture of other transport equipment and for manufacturing industries working on orders (excluding the manufacture of other transport equipment).

Analysis by Member State (continued)



Figures 8 to 11: Indices of new orders for manufacturing industries working on orders (excluding other transport equipment), and for the manufacture of other transport equipment, seasonally adjusted (2000=100); source: Eurostat STS

➢ ESSENTIAL INFORMATION – METHODOLOGICAL NOTES

The new orders index

The legal basis for the new orders index is Council Regulation No 1165/98 of 19 May 1998[1] concerning short-term statistics (STS-R) and Regulation (EC) No 1158/2005[2] of the European Parliament and of the Council of 6 July 2005 amending Council Regulation (EC) No 1165/98 concerning short-term statistics (STS-R).

The coverage of the new orders index includes NACE Divisions 17, 18, 21, 24, and 27 to 35.

It is the objective of the new orders received index to show the development of demand for products and services as an indication of future production. It is also suitable to indicate whether the demand originates from the domestic or non-domestic market. New orders refer to goods and services to be provided by the observation unit, including those originating from sub-contractors.

The new orders index is defined as the value of the contract linking a producer and a third party with respect to future deliveries by the producer of the goods and services. The order is accepted if, in the producer's judgement, there is sufficient evidence for a valid agreement. New orders include all duties and taxes on the goods or services that will be invoiced by the unit with the exception of the VAT and other similar deductible taxes directly linked to turnover. All other charges (transport, packaging, etc.) that are passed on to the customer are also included.

The industrial production index

The production index is an important business cycle indicator which shows the monthly activity of the industrial sector, which is one of the most volatile components of the economy. It is the objective of the production index to measure changes in the volume. It provides a measure of the volume trend in value added at factor cost over a given reference period.

Seasonal adjustment

For the calculation of EU-25 seasonally adjusted aggregates, Eurostat aggregates working day adjusted or gross data from the Member States. Seasonally adjusted EU-25 series are produced using the TRAMO & SEATS method. For this reason, EU-25 seasonally adjusted growth rates might differ from the weighted growth rates of the individual Member States.

Standard deviation

It is the most commonly used measure of spread of a range of values. The standard deviation formula is the square root of the variance. The variance is a measure of dispersion of a set of data points around their mean value. It is a measure of the average distance between a set of data points and their mean value; equal to the sum of the squares of the deviation from the mean value.

Correlation coefficient

The correlation coefficient is a Pearson's correlation coefficient and provides a measure of the relationship between two sets of data (with the same number of observations). Possible values range between +1 (which indicates a perfect correlation) and -1 (which indicates a perfect inverse correlation); a value of 0 indicates no correlation whatsoever.

Linear regression

A regression is a statistical method which tries to predict the value of an indicator by studying its relationship with one or more other indicators. The relationship is expressed through the means of a regression equation - an equation whereby one unknown variable can be predicted using the given value of one or more other variables. For example, the equation $Y = a + bX$ provides the estimated value for Y when the value for X and the constants a and b are known.

Dissemination

Eurostat publishes time series for detailed short-term statistics in the Industry, trade and services theme, available free of charge on Eurostat's web-site.

Further information

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[1] Official Journal No L 162, of 5 June 1998.

[2] Official Journal No L 191, of 22 July 2005.

Further information:

Reference publications:

Title	Quarterly Panorama of European business statistics - No. 1/2006
Catalogue No	KS-DL-06-001-EN-N (PDF version)

Data:EUROSTA Website/Home page/Industry, trade and services/Data/Industry, trade and services - horizontal view/Short-term Business Statistics - Monthly and Quarterly (Industry, Construction, Retail Trade and Other Services)

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  - **Industry, trade and services - horizontal view**
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